

Biodegradation of poly aromatic hydrocarbon in soil by immobilized bacteria and white rot fungi

Daechul Cho¹⁾, Sung Hyun Kwon²⁾, Jong Ki Jeon³⁾

¹⁾Dept. of Environmental Engineering, Soonchunhyang University

²⁾Dept. of Marine Environmental Engineering, Institute of Marine Industry, Gyeongsang National University

³⁾Div. of Chemical Engineering, Kongju National University

¹⁾TEL: +82-41-530-1341, FAX: +82-41-530-1659

ABSTRACT

PAHs are aromatic hydrocarbon compounds with two or more benzene rings. Because they are mostly toxic to human life, they need to be converted to non-toxic compounds or to be degraded completely. In order to remove or convert PAHs that exist in soil matrix as their final form from air or water environment, we used a bacterium called *Bacillus* and a white rot fungus which belongs to *Phanerochaete* genera. To maximize the population of microorganism we employed organic media in which microbes can be accumulated as immobilized thus prosper in high density. Sawdust and cork were chosen in order to be inoculated with microbial seed first and then mixed with soil. The degradation test was carried out for phenanthrene and pyrene as model pollutants. The result shows that media effect on phenanthrene was negligible whereas biodegradation ability of sawdust carrying the bacteria was better than that of biofilm-covered cork when pyrene was tested. PAH removal was also affected by soil moisture content. From the temporary evaluation, the degradation rate was found to be in the following order : *Bacillus* immobilized on sawdust. > *Bacillus* immobilized on cork > *Phanerochaete* immobilized on sawdust > *Phanerochaete* immobilized on cork.

References

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